REMARKS

We have carefully reviewed the claims in light of the Examiner's objections and have made revisions to the claim to overcome those objections, and we now comment thereon seriatim.

With respect to the comment directed to lines 9 and 10 of claim 1 we have revised the terminology to more concisely describe the claimed subject matter. The broad term "confining means" has been more precisely defined as "structural heat blocking members" which are (a) the table 25, backing plate 30, block 60, and block 68 of the Figures 2-3 embodiment, and (b) the hood 81, top 82, depending edge walls 83, 84 and cooling means 86 of the Figure 7 embodiment, all of which, we respectfully submit, were clearly and sufficiently disclosed in the application as filed.

With respect to the comment directed to lines 4-5 of claim 10 we direct the Examiner's attention to the hood in Figures 6 and 7 as filed and the text description thereof in specification paragraph 0044 in the 8 November, 2004 amendment. Specifically (referring to paragraph 0044), "... only the selected portion of the workpiece, here the body-shank junction portion, see Figure 7 of the die block 88, ..." describes the claimed "selected portion". The subjecting means is described in amended 0044 in the language "... a hood, indicated generally at 81, a top 82, depending edge walls 83, 84, tungsten halogen filament

heating elements 85, and, in this instance, cooling means indicated at 86, all of which comprise means for subjecting the body-shank junction portion of the die block to the electrical energy derived from the source of infrared heating". Thus we respectfully submit that the subject of the phrase in lines 4-5 of claim 10 noted by the Examiner was clearly sufficiently disclosed in the application as filed.

With respect to the comment directed to lines 6-7 of claim 10 we call the Examiner's attention to original Figures 6 and 7 of the drawing. Original Figure 6 shows the hood in an elevated, inoperative position; Figure 7 shows the hood 7 in a lowered, operative position which is explained in textual language in paragraph 0044 amended in the words: "The furnace includes conventional means such as any simple raising and lowering linkage, not shown in detail for purpose of clarity, for maintaining said selected portion 87 and said source of infrared heating 85 in fixed relationship to one another during subjection of said selected portion 87 to said source of infrared heating 85." Thus we respectfully submit that the subject of the phrase in lines 6-7 of claim 10 noted by the Examiner was clearly sufficiently disclosed in the application as filed.

With respect to the comment directed to lines 8-9 of claim 10 we call the Examiner's attention to paragraphs 0048, 0049 and earlier amended 0045. As stated in earlier amended 0045, "In one demonstration, approximately 12 infrared heat treatments were performed on an 18- x 22- x 12-inch thick steel block instrumented with 12 thermocouples located at

various depths and locations throughout the block. In this demonstration, means for controlling the depth in the steel block to which the infrared heating is applied consisted of applying a maximum of 51.2 kW on the top surface (22 x 18 inch) of the steel block with an infrared panel for 47 minutes prior to cutting back the power to maintain the surface temperature of the block at 1320°F (716°C). After 1 hour and 18 minutes, the furnace had to be held at 21.4 kW to maintain the given temperature." Thus we respectfully submit that the subject of the phrase in lines 8-9 of claim 10 noted by the Examiner was clearly sufficiently disclosed in the application as filed.

With respect to the Examiner's objections to claims 5, 6, 8 and 9 we have placed 5 in proper dependent form on claim 1, cancelled claim 6, and amended claims 8 and 9 to clearly describe apparatus construction and not a manner or method of use. Specifically the physical placement of the tungsten halogen lamps with respect to a physical part of the tool-workpiece combination; i.e.: the surface of the workpiece, and its exact orientation; i.e.: perpendicularly, is now concisely set forth in claim 8, and a specific description added to claim 9. It is therefor respectfully submitted that the originally questioned phrases have been clarified by spatial and construction language which can in no sense be thought of as merely reflecting a mode of usage.

With respect to the Examiner's 35 USC §112 comments we have amended claim 4 into proper Markush form. Our initial oversight is regretted.

With respect to the 35 USC §102 rejections on Nishikawa of claims 1, 7, 9 and 10 we comment initially on what Nishikawa discloses to highlight the contrast between Nishikawa's disclosure and the claimed subject matter.

In lines 62-68 of column 2 Nishikawa describes his invention as:

> "... the steps of forming a ... stripe or stripes of a deposit of graphite powder at least 50% of which is 20 um or less in particle diameter, on ... a metal strip and then heating the deposit by laser or a high luminance light source to form a selectively annealed portion ..."

In other words Nishikawa teaches against applying heat from the heat source directly to the workpiece as applicant does; rather Nishikawa teaches applying heat from the heat source to the graphite power coating, not directly to the workpieces as applicant does, and then relying on the heated powder to transfer heat, by conduction (lines 61, 62, column 3), to the underlying workpiece surface on which the graphite powder sits. In other words the heat generated from Nishikawa's heat source is transferred indirectly, eventually, to the workpiece as contrasted to applicant's concept of direct impingement from the heat source.

And the reason and need for Nishikawa's two step heat transfer process is explained by Nishikawa in lines 31-36 of column 3 as follows:

> "... graphite powder which scarcely reflects light and readily

> absorbs heat is formed on a portion ... of a metal strip ... to render the portion ... more heat-absorptive for faster heating ..."

And Nishikawa teaches in lines 61-63 of column 3 that only a specific type of graphite powder is essential, namely one having a true density of at least 2.1 g/cm^3 so that:

> "... the better will be the thermal conductivity of the graphite powder deposit, and the easier will be the attainment of rapid heating ..."

In other words applicant's apparatus discloses a two component system having a heat source capable of directing heat directly to a workpiece, whereas Nishikawa teaches that a three component system is essential, namely, a heat source, a workpiece, and, third, a layer of graphite powder located between the heat source and the workpiece and positioned to intercept the heat from the heat source, thereby interposing a third material between the workpiece on the heat source and preventing direct impingement of heat from the heat source directly onto the workpiece.

We respectfully submit that Nishikawa and applicant teach in opposing directions. Specifically, at the risk of over simplification, Nishikawa teaches a three component indirect heat system, applicant teaches a two component direct heat system, and the claims in their current condition clearly reflect that difference.

With respect to the 35 USC §102 rejection on ASM Handbook, Vol. 4, we call the

Examiner's attention to the fact that none of the illustrated devices are constructed in a manner analogous to applicant's device and none of them would be capable of treating the highly specialized products applicant's apparatus is applied to, namely die blocks "two feet or more in width together with lengths into double figures", (specification paragraphs [0028] lines 10, 11), and a foot thick, (specification paragraph [0045]), and, further, in the uniform depth treatment layer represented in Figure 7. Claims 1 and 10 in particular have been revised to more concisely set out the unique combination of features which work together to achieve a great advance in the forging industry - the prolongation of die block life by a very significant factor by eliminating shank-body junction cracking.

We have attempted to respond substantively to all the Examiner's comments and in doing so we believe the application is now in condition for formal allowance. We will of course to be pleased to discuss any further points the Examiner believes may have been overlooked or not completely responded to, but in the absence of any further word from the Examiner a Notice of Allowance is respectfully requested.

Respectfully submitted,

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